

A NEW SPECIES OF *NEPHRURUS* (REPTILIA: GEKKONIDAE) FROM SOUTH AUSTRALIA

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Summary

HARVEY, C. (1983) A new species of *Nephrurus* (Reptilia: Gekkonidae) from South Australia. *Trans. R. Soc. S. Aust.* **107**(4), 231-235, 30 November, 1983.

A new species of Knob-tailed Gecko from the mid-north of South Australia is described here as *Nephrurus deleani* sp. nov. It is most like *N. stellatus* Storr, *N. laevis* Mertens and *N. vertebralis* Storr, from which it differs mainly in caudal scalation and dorsal patterning. Notes on habitat and aspects of biology are included.

KEY WORDS: *Nephrurus*, taxonomy, Pernatty Lagoon, allopatric, Gekkonidae, Reptilia, new species.

Introduction

The gekkonid genus *Nephrurus* is widely distributed throughout arid Australia and three species have been recorded from South Australia. *Nephrurus levis* De Vis, the most wide spread member of the genus, is found throughout the State north of Port Augusta. Two records also exist from the Dangali Conservation Park, approximately 80 km north of Renmark.

Nephrurus stellatus Storr extends westwards from Eyre Peninsula to southern Western Australia.

Nephrurus laevis Mertens occurs in the western half of South Australia, north of the Trans Australia Railway and west of the Stuart Highway (Fig. 1).

In 1971 a juvenile specimen of *Nephrurus* from Pernatty Lagoon was identified as *Nephrurus vertebralis* Storr probably due to the presence of a pale vertebral stripe which extended from just behind the head to the end of the tail.

Additional specimens from Pernatty Lagoon represent a new species which is described here.

Materials and Methods

All material examined in this paper is deposited in the following institutions: South Australian Museum Adelaide (SAM), Western Australian Museum Perth (WAM) and the Museums and Art Galleries of the Northern Territory Darwin (NTM).

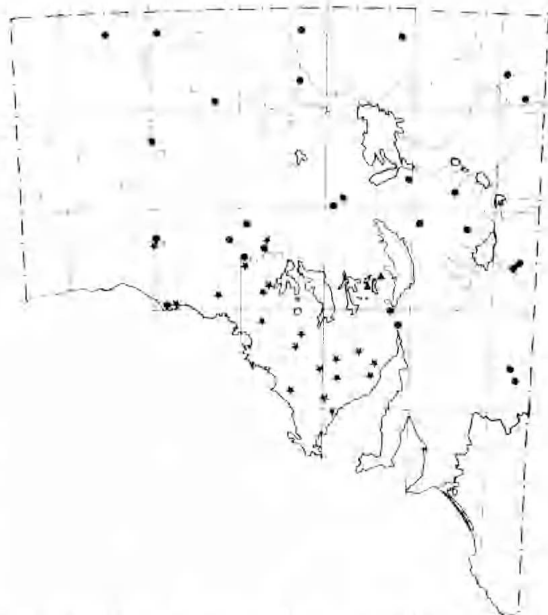


Fig. 1. Distribution of the Genus *Nephrurus* in South Australia based on the records of the South Australian Museum. triangles = *N. deleani*, closed circles = *N. levis*, open circles = *N. laevis*, stars = *N. stellatus*.

Specimens were measured with dial callipers to the nearest 0.1 mm, following Storr (1968). Measurements taken were: snout-vent length (SVL), tail length (TL), head length (HL), head width (HW), horizontal diameter of eye (ED), length of ear aperture (EA), inter-orbital distance (IOD), internostril distance (ID), hindlimb length (HLL). Scale counts recorded were: longitudinal rows of tubercles (LRT), caudal annuli (CA), interorbitals (IO). Comparisons between some of these characters are recorded on Table 1. Standard deviations are included for each mean.

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***Nephrurus deleani* sp. nov.**

FIGS 1, 2, 3.

Holotype: SAM R21868, adult female collected on 24.iv.1981 by S. Delean 44 km south-east of Pimba, S.A. (31°31'S, 137°08'E).

Diagnosis: A relatively large terrestrial gecko with short, narrow, slightly depressed tail, terminating in small knob. Dorsal colour pattern highly variable, pale vertebral stripe present in some juveniles.

Description of holotype:

Scalation: Head scales small, juxtaposed; largest in occiput and interorbital region; smallest in gular and postocular areas. Neck with scattered, conical tubercles, smaller than those on occiput. Upper labials 15, lower labials 20; larger than surrounding scales. Dorsal surface covered with small, granular scales, uniformly intermingled with tubercles; tubercles largest on sacrum, smaller than those on occipital and interorbital regions and surrounded by scales of same size and shape as those on rest of dorsal surface. Forelimbs covered with small granular scales, interspersed with a few small tubercles. Hindlimbs covered with small, granular scales, interspersed with large, conical tubercles most prominent on thighs and slightly smaller than tubercles on dorsal surface. Scales on ventral surface uniformly small, flat and juxtaposed. Upper surface of tail covered with small scales; 9 regular longitudinal rows of conical, mucronate tubercles, smaller in diameter than those on dorsum, pointing backwards and surrounded by a ring of scales slightly larger



Fig. 2. *Nephrurus deleani* sp. nov. in life.

than those on rest of upper caudal surface. Caudal annuli 17.

Colouration: Dorsal ground colour light brown, intermingled with dark brown-black areas, with alternate fawn and dark brown transverse bars (Fig. 2). Flanks spotted, sacrum predominantly dark brown. Tubercles are brown except those occurring on spots and transverse bars, which are fawn. Ventral surface white. Head light brown, intermingled with areas of fawn and dark brown. Labials light brown. Distinct short, thick fawn coloured bar, which bends back slightly to form "V" on occiput. Second bar runs across neck; third pale bar originating at neck, distinctly "V" shaped and extending back diagonally to mid-dorsal line. Dorsal surface of tail predominantly dark brown. Tubercles white, except for a few dark brown ones on proximal annuli. Under-surface of tail off-white.

Holotype measurements (in mm): SVL 79.3; TL 27.2; HL 24.5; HW 19.4; HLL 35.4; ED 5.6; EA 2.4; IOD 3.3; ID 3.5.

Etymology: This species is named for Mr Steven Delean, who collected the holotype and most of the paratypes.

Distribution

Specimens of *Nephrurus deleani* have been collected only from the *Acacia* vegetated sand hills immediately north and west of Pernatty Lagoon, despite extensive searching to the north and to the south as far as Uro Bluff (32°08'S, 137°36'E). *N. deleani* is allopatric with the closely related *N. stellatus*.

Variation

There are 4 paratypes, all are from 44 km south of Pimba, S.A. (31°31'S, 137°08'E): WAM R80751, an adult female, 23.iv.1982, C. Harvey and S. Delean; SAM R21865-66, juvenile females, 24.iv.1981, S. Delean; SAM R21867, juvenile male, 25.iv.1982, M. Francis. Unlike other congeners, specimens of *N. deleani* show considerable variation in dorsal colour patterning, not only between adults, but also between adult and juvenile specimens. Even the most consistent features of dorsal patterning—the fawn transverse bars and the spotted flanks—are absent or highly modified in some *N. deleani*.

Juveniles differ from adults in having a much darker background colour, with more distinct body markings. Of 32 juvenile *N.*

TABLE 1. Comparison of 6 characteristics between the five species examined.

	Character					
	TL/SVL	HL/SVL	IO	DT	LRT	CA
<i>N. deleani</i>	35.8 ± 3.3 (27.6–40.2) n = 14	30.0 ± 2.4 (24.5–33.6) n = 14	5.2 ± 0.7 (4–6) n = 6	single	9.2 ± 0.4 (9–10) n = 6	15.7 ± 0.8 (15–17) n = 6
<i>N. stellatus</i>	30.1 ± 3.3 (23.1–46.0) n = 22	30.9 ± 4.9 (23.1–35.2) n = 22	5.1 ± 0.7 (4–7) n = 46	rosette-shaped	5.7 ± 0.5 (5–7) n = 31	11.2 ± 1.2 (9–14) n = 32
<i>N. vertebralis</i>	35.0 ± 2.0 (32.5–37.8) n = 5	29.5 ± 1.2 (28.3–31.2) n = 5	5.1 ± 0.3 (5–6) n = 9	single	7.8 ± 0.4 (7–8) n = 8	18.3 ± 0.8 (17–19) n = 8
<i>N. laevis</i>	33.4 ± 3.4 (28.8–37.4) n = 12	33.0 ± 3.5 (29.9–43.3) n = 14	6.1 ± 0.6 (5–7) n = 21	absent	6.7 ± 0.4 (5–7) n = 18	18.3 ± 1.8 (13–19) n = 14
<i>N. levis</i>	44.9 ± 4.9 (31.0–60.2) n = 62	32.9 ± 43.3 (28.0–40.8) n = 94	4.7 ± 0.7 (4–8) n = 94	single	8.3 ± 0.8 (6–10) n = 62	17.2 ± 1.5 (12–21) n = 62

deleani collected, only 3 have shown an obvious vertebral stripe; in none of these is the stripe as wide, or as obvious as it is in *N. vertebralis*.

Comparisons with other congeners

The dorsal colour pattern of *N. deleani* distinguishes it from all congeners.

N. deleani differs from *N. levis* by having a much shorter, narrower, less depressed tail (Table 1). The fore and hind limbs of *N. levis* are more heavily tuberculated than in *N. deleani*.

N. deleani is distinguished from *N. vertebralis* in having more longitudinal rows of caudal scales (Table 1), a shorter ear slit, fewer tubercles on the fore and hind limbs and complete absence of a vertebral stripe in adult specimens.

The absence of tubercles on the dorsal surface, a lower number of longitudinal rows of tubercles on the tail and differences in dorsal patterning distinguish *N. laevis* from *N. deleani* (Table 1).

N. deleani has more caudal annuli and more longitudinal rows of caudal tubercles (Table 1) than *N. stellatus*. It further differs from *N. stellatus* by having dorsal tubercles surrounded by a ring of scales similar in size to those occurring between the tubercles, rather than larger (Fig. 3).

Habitat

The area occupied by *N. deleani* is isolated geographically from other *Nephrurus* populations. The high number of salt lakes that encircle the area, together with the presence

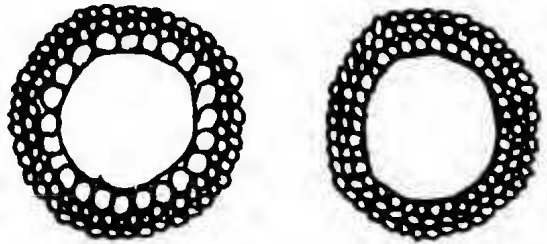


Fig. 3. Dorsal tubercle pattern of left, *N. stellatus* and right, *N. deleani*.

of the Gawler Ranges to the south-west would effectively prevent interbreeding between *N. deleani* and *N. laevis* and *N. stellatus*. *N. deleani* has been collected only on the crests of sand dunes that are devoid of *Triodia* and are dominated by *Acacia aneura* and *A. ligulata*. *N. deleani* habitat is more similar to that preferred by *N. vertebralis* (Pianka & Pianka, 1976) than to that of *N. stellatus*, which occurs exclusively in *Triodia-Eucalyptus* associations.

Notes on biology

In common with other congeners, *N. deleani* will readily feed upon a variety of insects and arachnids in captivity, with adult specimens primarily consuming small geckos. *Rhynchodura ornata*, Günther and *Diplodactylus danae* (Wermuth), which are sympatric with *N. deleani*, probably form a large part of the diet of adult specimens.

Only limited data are available on reproductive habits. One female (SVL 95 mm, weight 11.7 g) deposited 2 eggs, measuring

22 × 12 mm and 22 × 13 mm, on 3.iii.1981. Another female (SVL 92 mm, weight 16.5 g) collected by the author on 24.iv.1982, contained two eggs which had still not been laid by 18.vii.1982.

Material examined:

South Australia:—

Nephrurus levis: SAM R152 (Oodnadatta); SAM R707, R878 (Wynbring RS); SAM R1884A–B (Tarcoola); SAM R1962A–B (Smithfield—locality doubtful); SAM R1963 (Murnpeowie); SAM R1968 (between Everard and Barrow Ranges); SAM R1985 (between Oolden and Fowler's Bay); SAM R3109A–B (Ernabella); SAM R3709 (Muloorina Station); SAM R4298 (16 km south of Cadelga HS); SAM R4992A–C (Lake Coongie); SAM R5443 (Dalhousie Springs); SAM R5503 (Callabonna Station); SAM R7556–R7566 (Muggrave Park); SAM R7586 (Hari Rocks); SAM R1888, R9010 (Port Augusta); SAM R14171 (Hesso); SAM R14631 (20 km east of Ammaroodinna Hill, Granite Downs Station); SAM R14880 (Glenmaynie Bore); SAM R14555A–B (22 km west-north-west of Morolana HS); SAM R15498, R16728 (10 km north-west of Emu); SAM R17278.9 (Wastell's Dam, Billa Kalina Station); SAM R17296 (Patterson's Dam, Billa Kalina Station); SAM R17807 (Wooltana Station); SAM R18069 (Simpson Desert Conservation Park); SAM R18203 (approximately 15 km south-west of Wyola Lake); SAM R18204 (approximately 85 km north of Wyola Lake); SAM R18238 (approximately 20 km north of Wyola Lake); SAM R19202 (Kallakoopah Creek); SAM R19213 (8 km north of Kallakoopah Creek); NTM R1020 (100 km north of Renmark).

Nephrurus laevisinus: SAM R661, R665, R1653A (Ooldea); SAM R3298 (30 km south of Emu); SAM R14053 (Tarcoola); SAM R14632 (20 km east of Ammaroodinna Hill, Granite Downs Station); SAM R14987A–D (7 km west of Immarna RS); SAM R15497B (10 km north-west of Emu); SAM R15566A–B (103 km west of Vokes Hill Corner); SAM R15609 (12 km north-west of Wardarlie, Parkalidge Rockhole); SAM R15792 (9 km east of Maralinga); SAM R16761 (Wilgena Station); SAM R17462 (North-West Conservation Park); SAM R17490 (45.7 km south of Vokes Hill); SAM R18221–2 (approximately 85 km north of Wyola Lake); SAM R18241 (approximately 20 km south-west of Wyola Lake).

Nephrurus stellatus: SAM R641 (Kielpa, West Coast); SAM R1964 (Baringa—locality doubtful); SAM R3209A–D (Ooldea Soak); SAM R5284 (Ceduna); SAM R11461 (Port Njef); SAM R12415A–C (Bascombe's Well National Park); SAM R13438 (Hince's National Park); SAM R13746 (Childara Rockhole); SAM R14054A–H (Tarcoola); SAM R14056A (Ooldea); SAM R14561A–B (approximately 30 km north-east of

Cowell); SAM R15205A–B (28 km north-east of Wirrilla); SAM R15006A–C (23 km north of Kaonibba Mission); SAM R15384 (30 km west of Childara Rockhole); SAM R15734A–B, R15793 (65 km west of Meelera Rockhole); SAM R17663 ("Melaleuca", 30 km west of Kimba); SAM R17954 (Lake Gilles Conservation Park); SAM R18515–6 (Piney Station, Gawler Ranges); SAM R19597.9 (60 km south-west of Whyalla).

Western Australia:—

Nephrurus vertebrales: WAM R5300 (Wadginarra); WAM R13112 (Yuin Station); WAM R48712 (Plumridge Lakes area); WAM R49242 (approximately 40 km east of Paynes Find); WAM R53023 (40 km south of Yinnetharra); WAM R53848 (27 km east of Pt. Sunday, Great Victoria Desert); WAM R53574 (8 km east of Pt. Sunday); WAM R70120 (presumably 7.5 km north of Dandaraga HS); WAM R78156 (10 km south of Leonora).

Northern Territory:—

Nephrurus levis: NTM R693 (Tanami Sanctuary); NTM R761 (6.5 km north of Alice Springs); NTM R1403 (107.8 km west of Yuendumu); NTM R1409 (31 km west of Mt Doreen); NTM R1410 (33.6 km west of Mt Doreen); NTM R1446 (228.8 km west of Yuendumu); NTM R1488–1500, R1511, R1747 (between 10.8 and 33 km west of Rabbit Flat Roadhouse); NTM R1535, R1566, R1580 (Horden Hill, Granites); NTM R1595–97, R1639, R1848 (Maryvale); NTM R1695 (Northern Territory); NTM R1607, R1844–1847 (between 4 km and 20 km east of Maryvale); NTM R2052 (west of Yuendumu); NTM R2466, R3764 (Alice Springs); NTM R8620 (30 km east of Three Ways); NTM R9846 (90 km east of Three Ways).

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